

- 1 -

SEQUENCE LISTING

<110> ASTRAZENECA AB

<120> CPU MUTANTS

<130> LDG/101278

<160> 19

<170> PatentIn version 3.2

<210> 1

<211> 1269

<212> DNA

<213> Homo sapiens

<400> 1

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cttattcaac agcagatttc caacgacaca gtcagccccc gagcctccgc atcgtactat      360
gaacagtatc actcactaaa tgaaatctat tcttg gatag aatttataac tgagaggcat      420
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<210> 2

<211> 423

<212> PRT

<213> Homo sapiens

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<400> 2

Met Lys Leu Cys Ser Leu Ala Val Leu Val Pro Ile Val Leu Phe Cys
1 5 10 15

Glu Gln His Val Phe Ala Phe Gln Ser Gly Gln Val Leu Ala Ala Leu
20 25 30

Pro Arg Thr Ser Arg Gln Val Gln Val Leu Gln Asn Leu Thr Thr Thr
35 40 45

Tyr Glu Ile Val Leu Trp Gln Pro Val Thr Ala Asp Leu Ile Val Lys
50 55 60

Lys Lys Gln Val His Phe Phe Val Asn Ala Ser Asp Val Asp Asn Val
65 70 75 80

Lys Ala His Leu Asn Val Ser Gly Ile Pro Cys Ser Val Leu Leu Ala
85 90 95

Asp Val Glu Asp Leu Ile Gln Gln Gln Ile Ser Asn Asp Thr Val Ser
100 105 110

Pro Arg Ala Ser Ala Ser Tyr Tyr Glu Gln Tyr His Ser Leu Asn Glu
115 120 125

Ile Tyr Ser Trp Ile Glu Phe Ile Thr Glu Arg His Pro Asp Met Leu
130 135 140

Thr Lys Ile His Ile Gly Ser Ser Phe Glu Lys Tyr Pro Leu Tyr Val
145 150 155 160

Leu Lys Val Ser Gly Lys Glu Gln Ala Ala Lys Asn Ala Ile Trp Ile
165 170 175

Asp Cys Gly Ile His Ala Arg Glu Trp Ile Ser Pro Ala Phe Cys Leu
180 185 190

Trp Phe Ile Gly His Ile Thr Gln Phe Tyr Gly Ile Ile Gly Gln Tyr
195 200 205

Thr Asn Leu Leu Arg Leu Val Asp Phe Tyr Val Met Pro Val Val Asn
210 215 220

Val Asp Gly Tyr Asp Tyr Ser Trp Lys Lys Asn Arg Met Trp Arg Lys
225 230 235 240

Asn Arg Ser Phe Tyr Ala Asn Asn His Cys Ile Gly Thr Asp Leu Asn
245 250 255

Arg Asn Phe Ala Ser Lys His Trp Cys Glu Glu Gly Ala Ser Ser Ser
260 265 270

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Ser Cys Ser Glu Thr Tyr Cys Gly Leu Tyr Pro Glu Ser Glu Pro Glu
275 280 285

Val Lys Ala Val Ala Ser Phe Leu Arg Arg Asn Ile Asn Gln Ile Lys
290 295 300

Ala Tyr Ile Ser Met His Ser Tyr Ser Gln His Ile Val Phe Pro Tyr
305 310 315 320

Ser Tyr Thr Arg Ser Lys Ser Lys Asp His Glu Glu Leu Ser Leu Val
325 330 335

Ala Ser Glu Ala Val Arg Ala Ile Glu Lys Thr Ser Lys Asn Thr Arg
340 345 350

Tyr Thr His Gly His Gly Ser Glu Thr Leu Tyr Leu Ala Pro Gly Gly
355 360 365

Gly Asp Asp Trp Ile Tyr Asp Leu Gly Ile Lys Tyr Ser Phe Thr Ile
370 375 380

Glu Leu Arg Asp Thr Gly Thr Tyr Gly Phe Leu Leu Pro Glu Arg Tyr
385 390 395 400

Ile Lys Pro Thr Cys Arg Glu Ala Phe Ala Ala Val Ser Lys Ile Ala
405 410 415

Trp His Val Ile Arg Asn Val
420

<210> 3
<211> 52
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide Primer

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52

<210> 4
<211> 60
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide Primer

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<210> 5
<211> 64

- 4 -

<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide Primer

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60
gtcc 64

<210> 6
<211> 66
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide Primer

<400> 6
ggggacaagt ttgtacaaaa aagcaggctt caccatgaag ctttgcagcc ttgcagtcct
60
tgtacc 66

<210> 7
<211> 66
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide

<400> 7
ggggaccact ttgtacaaga aagctggggtc ctaagatcca ctatgatgat gatgatgatg
60
atgatg 66

<210> 8
<211> 18
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide Primer

<400> 8
acccattggt ctcttctg 18

<210> 9
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide Primer

<400> 9
ttggtcttgc tggaatcagt 20

<210> 10
<211> 57
<212> DNA
<213> Artificial

- 5 -

<220>

<223> Oligonucleotide Primer

<400> 10

ccaagcttca tccaacagc aattttctct agatctggtg aagctggagc tacggag 57

<210> 11

<211> 18

<212> DNA

<213> Artificial

<220>

<223> Oligonucleotide Primer

<400> 11

tgccaaaggg gcggtccc 18

<210> 12

<211> 422

<212> PRT

<213> Mus musculus

<400> 12

Met	Lys	Leu	His	Gly	Leu	Gly	Ile	Leu	Val	Ala	Ile	Ile	Leu	Tyr	Glu
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Gln	His	Gly	Phe	Ala	Phe	Gln	Ser	Gly	Gln	Val	Leu	Ser	Ala	Leu	Pro
			20					25					30		

Arg	Thr	Ser	Arg	Gln	Val	Gln	Leu	Leu	Gln	Asn	Leu	Thr	Thr	Thr	Tyr
		35					40					45			

Glu	Val	Val	Leu	Trp	Gln	Pro	Val	Thr	Ala	Glu	Phe	Ile	Glu	Lys	Lys
	50					55					60				

Lys	Glu	Val	His	Phe	Phe	Val	Asn	Ala	Ser	Asp	Val	Asp	Ser	Val	Lys
65					70					75					80

Ala	His	Leu	Asn	Val	Ser	Arg	Ile	Pro	Phe	Asn	Val	Leu	Met	Asn	Asn
			85						90					95	

Val	Glu	Asp	Leu	Ile	Glu	Gln	Gln	Thr	Phe	Asn	Asp	Thr	Val	Ser	Pro
			100					105					110		

Arg	Ala	Ser	Ala	Ser	Tyr	Tyr	Glu	Gln	Tyr	His	Ser	Leu	Asn	Glu	Ile
		115					120					125			

Tyr	Ser	Trp	Ile	Glu	Val	Ile	Thr	Glu	Gln	His	Pro	Asp	Met	Leu	Gln
	130					135					140				

Lys	Ile	Tyr	Ile	Gly	Ser	Ser	Phe	Glu	Lys	Tyr	Pro	Leu	Tyr	Val	Leu
145					150					155					160

Lys	Val	Ser	Gly	Lys	Glu	Gln	Arg	Ile	Lys	Asn	Ala	Ile	Trp	Ile	Asp
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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165	170	175
Cys Gly Ile His Ala Arg Glu Trp Ile Ser Pro Ala Phe Cys Leu Trp 180 185 190		
Phe Ile Gly Tyr Val Thr Gln Phe His Gly Lys Glu Asn Leu Tyr Thr 195 200 205		
Arg Leu Leu Arg His Val Asp Phe Tyr Ile Met Pro Val Met Asn Val 210 215 220		
Asp Gly Tyr Asp Tyr Thr Trp Lys Lys Asn Arg Met Trp Arg Lys Asn 225 230 235 240		
Arg Ser Ala His Lys Asn Asn Arg Cys Val Gly Thr Asp Leu Asn Arg 245 250 255		
Asn Phe Ala Ser Lys His Trp Cys Glu Lys Gly Ala Ser Ser Ser Ser 260 265 270		
Cys Ser Glu Thr Tyr Cys Gly Leu Tyr Pro Glu Ser Glu Pro Glu Val 275 280 285		
Lys Ala Val Ala Asp Phe Leu Arg Arg Asn Ile Asp His Ile Lys Ala 290 295 300		
Tyr Ile Ser Met His Ser Tyr Ser Gln Gln Ile Leu Phe Pro Tyr Ser 305 310 315 320		
Tyr Asn Arg Ser Lys Ser Lys Asp His Glu Glu Leu Ser Leu Val Ala 325 330 335		
Ser Glu Ala Val Arg Ala Ile Glu Ser Ile Asn Lys Asn Thr Arg Tyr 340 345 350		
Thr His Gly Ser Gly Ser Glu Ser Leu Tyr Leu Ala Pro Gly Gly Ser 355 360 365		
Asp Asp Trp Ile Tyr Asp Leu Gly Ile Lys Tyr Ser Phe Thr Ile Glu 370 375 380		
Leu Arg Asp Thr Gly Arg Tyr Gly Phe Leu Leu Pro Glu Arg Tyr Ile 385 390 395 400		
Lys Pro Thr Cys Ala Glu Ala Leu Ala Ala Ile Ser Lys Ile Val Trp 405 410 415		
His Val Ile Arg Asn Thr 420		

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<211> 422
<212> PRT
<213> Rattus norvegicus

<400> 13

Met Lys Leu Tyr Gly Leu Gly Val Leu Val Ala Ile Ile Leu Tyr Glu
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Lys His Gly Leu Ala Phe Gln Ser Gly His Val Leu Ser Ala Leu Pro
20 25 30

Arg Thr Ser Arg Gln Val Gln Leu Leu Gln Asn Leu Thr Thr Thr Tyr
35 40 45

Glu Val Val Leu Trp Gln Pro Val Thr Ala Glu Phe Ile Glu Lys Lys
50 55 60

Lys Glu Val His Phe Phe Val Asn Ala Ser Asp Val Asn Ser Val Lys
65 70 75 80

Ala Tyr Leu Asn Ala Ser Arg Ile Pro Phe Asn Val Leu Met Asn Asn
85 90 95

Val Glu Asp Leu Ile Gln Gln Gln Thr Ser Asn Asp Thr Val Ser Pro
100 105 110

Arg Ala Ser Ser Ser Tyr Tyr Glu Gln Tyr His Ser Leu Asn Glu Ile
115 120 125

Tyr Ser Trp Ile Glu Val Ile Thr Glu Gln His Pro Asp Met Leu Gln
130 135 140

Lys Ile Tyr Ile Gly Ser Ser Tyr Glu Lys Tyr Pro Leu Tyr Val Leu
145 150 155 160

Lys Val Ser Gly Lys Glu His Arg Val Lys Asn Ala Ile Trp Ile Asp
165 170 175

Cys Gly Ile His Ala Arg Glu Trp Ile Ser Pro Ala Phe Cys Leu Trp
180 185 190

Phe Ile Gly Tyr Val Thr Gln Phe His Gly Lys Glu Asn Thr Tyr Thr
195 200 205

Arg Leu Leu Arg His Val Asp Phe Tyr Ile Met Pro Val Met Asn Val
210 215 220

Asp Gly Tyr Asp Tyr Thr Trp Lys Lys Asn Arg Met Trp Arg Lys Asn
225 230 235 240

Arg Ser Val His Met Asn Asn Arg Cys Val Gly Thr Asp Leu Asn Arg
245 250 255

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Asn Phe Ala Ser Lys His Trp Cys Glu Lys Gly Ala Ser Ser Phe Ser
260 265 270

Cys Ser Glu Thr Tyr Cys Gly Leu Tyr Pro Glu Ser Glu Pro Glu Val
275 280 285

Lys Ala Val Ala Asp Phe Leu Arg Arg Asn Ile Asn His Ile Lys Ala
290 295 300

Tyr Ile Ser Met His Ser Tyr Ser Gln Gln Ile Leu Phe Pro Tyr Ser
305 310 315 320

Tyr Asn Arg Ser Lys Ser Lys Asp His Glu Glu Leu Ser Leu Val Ala
325 330 335

Ser Glu Ala Val Arg Ala Ile Glu Ser Ile Asn Lys Asn Thr Arg Tyr
340 345 350

Thr His Gly Ser Gly Ser Glu Ser Leu Tyr Leu Ala Pro Gly Gly Ser
355 360 365

Asp Asp Trp Ile Tyr Asp Leu Gly Ile Lys Tyr Ser Phe Thr Ile Glu
370 375 380

Leu Arg Asp Thr Gly Arg Tyr Gly Phe Leu Leu Pro Glu Arg Phe Ile
385 390 395 400

Lys Pro Thr Cys Ala Glu Ala Leu Ala Ala Val Ser Lys Ile Ala Trp
405 410 415

His Val Ile Arg Asn Ser
420

<210> 14
<211> 34
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide Primer

<400> 14
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34

<210> 15
<211> 39
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide Primer

<400> 15
atcatgcggc cgcttaaaca ttcctaatga catgccaaag

39

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<210> 16
 <211> 20
 <212> PRT
 <213> Artificial

<220>
 <223> 8-Histidine containing Peptide tag

<400> 16

Leu Glu Pro Gly Asp Asp Asp Asp Lys His His His His His His His
 1 5 10 15

His Ser Gly Ser
 20

<210> 17
 <211> 423
 <212> PRT
 <213> Homo sapiens

<400> 17

Met Lys Leu Cys Ser Leu Ala Val Leu Val Pro Ile Val Leu Phe Cys
 1 5 10 15

Glu Gln His Val Phe Ala Phe Gln Ser Gly Gln Val Leu Ala Ala Leu
 20 25 30

Pro Arg Thr Ser Arg Gln Val Gln Val Leu Gln Asn Leu Thr Thr Thr
 35 40 45

Tyr Glu Ile Val Leu Trp Gln Pro Val Thr Ala Asp Leu Ile Val Lys
 50 55 60

Lys Lys Gln Val His Phe Phe Val Asn Ala Ser Asp Val Asp Asn Val
 65 70 75 80

Lys Ala His Leu Asn Val Ser Gly Ile Pro Cys Ser Val Leu Leu Ala
 85 90 95

Asp Val Glu Asp Leu Ile Gln Gln Gln Ile Ser Asn Asp Thr Val Ser
 100 105 110

Pro Arg Ala Ser Ala Ser Tyr Tyr Glu Gln Tyr His Ser Leu Asn Glu
 115 120 125

Ile Tyr Ser Trp Ile Glu Phe Ile Thr Glu Arg His Pro Asp Met Leu
 130 135 140

Thr Lys Ile His Ile Gly Ser Ser Phe Glu Lys Tyr Pro Leu Tyr Val
 145 150 155 160

Leu Lys Val Ser Gly Lys Glu Gln Ala Ala Lys Asn Ala Ile Trp Ile

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	165		170		175
Asp Cys Gly Ile His Ala Arg Glu Trp Ile Ser Pro Ala Phe Cys Leu	180		185		190
Trp Phe Ile Gly His Ile Thr Gln Phe Tyr Gly Ile Ile Gly Gln Tyr	195		200		205
Thr Asn Leu Leu Arg Leu Val Asp Phe Tyr Val Met Pro Val Val Asn	210		215		220
Val Asp Gly Tyr Asp Tyr Ser Trp Lys Lys Asn Arg Met Trp Arg Lys	225		230		235
Asn Arg Ser Phe Tyr Ala Asn Asn His Cys Ile Gly Thr Asp Leu Asn	245		250		255
Arg Asn Phe Ala Ser Lys His Trp Cys Glu Glu Gly Ala Ser Ser Ser	260		265		270
Ser Cys Ser Glu Thr Tyr Cys Gly Leu Tyr Pro Glu Ser Glu Pro Glu	275		280		285
Val Lys Ala Val Ala Ser Phe Leu Arg Arg Asn Ile Asn Gln Ile Lys	290		295		300
Ala Tyr Ile Ser Met His Ser Tyr Ser Gln His Ile Val Phe Pro Tyr	305		310		315
Ser Tyr Thr Arg Ser Lys Ser Lys Asp His Glu Glu Leu Ser Leu Val	325		330		335
Ala Ser Glu Ala Val Arg Ala Ile Glu Lys Thr Ser Lys Asn Thr Arg	340		345		350
Tyr Thr Tyr Gly Gln Gly Ser Glu Thr Leu Tyr Leu Ala Pro Gly Gly	355		360		365
Gly Asp Asp Trp Ile Tyr Asp Leu Gly Ile Lys Tyr Ser Phe Thr Ile	370		375		380
Glu Leu Arg Asp Thr Gly Thr Tyr Gly Phe Leu Leu Pro Glu Arg Tyr	385		390		395
Ile Lys Pro Thr Cys Arg Glu Ala Phe Ala Ala Val Ser Lys Ile Ala	405		410		415
Trp His Val Ile Arg Asn Val	420				

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<211> 423

<212> PRT

<213> Homo sapiens

<400> 18

Met Lys Leu Cys Ser Leu Ala Val Leu Val Pro Ile Val Leu Phe Cys
1 5 10 15

Glu Gln His Val Phe Ala Phe Gln Ser Gly Gln Val Leu Ala Ala Leu
20 25 30

Pro Arg Thr Ser Arg Gln Val Gln Val Leu Gln Asn Leu Thr Thr Thr
35 40 45

Tyr Glu Ile Val Leu Trp Gln Pro Val Thr Ala Asp Leu Ile Val Lys
50 55 60

Lys Lys Gln Val His Phe Phe Val Asn Ala Ser Val Val Asp Asn Val
65 70 75 80

Lys Ala His Leu Asn Val Ser Gly Ile Pro Cys Ser Val Leu Leu Ala
85 90 95

Asp Val Glu Asp Leu Ile Gln Gln Gln Ile Ser Asn Asp Thr Val Ser
100 105 110

Pro Arg Ala Ser Ala Ser Tyr Tyr Glu Gln Tyr His Ser Leu Asn Glu
115 120 125

Ile Tyr Ser Trp Ile Glu Phe Ile Thr Glu Arg His Pro Asp Met Leu
130 135 140

Thr Lys Ile His Ile Gly Ser Ser Phe Glu Lys Tyr Pro Leu Tyr Val
145 150 155 160

Leu Lys Val Ser Gly Lys Glu Gln Ala Ala Lys Asn Ala Ile Trp Ile
165 170 175

Asp Cys Gly Ile His Ala Arg Glu Trp Ile Ser Pro Ala Phe Cys Leu
180 185 190

Trp Phe Ile Gly His Ile Thr Gln Phe Tyr Gly Ile Ile Gly Gln Tyr
195 200 205

Thr Asn Leu Leu Arg Leu Val Asp Phe Tyr Val Met Pro Val Val Asn
210 215 220

Val Asp Gly Tyr Asp Tyr Ser Trp Lys Lys Asn Arg Met Trp Arg Lys
225 230 235 240

Asn Arg Ser Phe Tyr Ala Asn Asn His Cys Ile Gly Thr Asp Leu Asn
245 250 255

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Arg Asn Phe Ala Ser Lys His Trp Cys Glu Glu Gly Ala Ser Ser Ser
260 265 270

Ser Cys Ser Glu Thr Tyr Cys Gly Leu Tyr Pro Glu Ser Glu Pro Glu
275 280 285

Val Lys Ala Val Ala Ser Phe Leu Arg Arg Asn Ile Asn Gln Ile Lys
290 295 300

Ala Tyr Ile Ser Met His Ser Tyr Ser Gln His Ile Val Phe Pro Tyr
305 310 315 320

Ser Tyr Thr Arg Ser Lys Cys Lys Asp His Glu Glu Leu Ser Leu Val
325 330 335

Ala Ser Glu Ala Val Arg Ala Ile Glu Lys Thr Asn Lys Asn Thr Arg
340 345 350

Tyr Thr Tyr Gly Gln Gly Ser Glu Thr Leu Tyr Leu Ala Pro Gly Gly
355 360 365

Gly Asp Asp Trp Ile Tyr Asp Leu Gly Ile Lys Tyr Ser Phe Thr Ile
370 375 380

Glu Leu Arg Asp Thr Gly Thr Tyr Gly Phe Leu Leu Pro Glu Arg Tyr
385 390 395 400

Ile Lys Pro Thr Cys Arg Glu Ala Phe Ala Ala Val Ser Lys Ile Ala
405 410 415

Trp His Val Ile Arg Asn Val
420

<210> 19
<211> 423
<212> PRT
<213> Homo sapiens

<400> 19

Met Lys Leu Cys Ser Leu Ala Val Leu Val Pro Ile Val Leu Phe Cys
1 5 10 15

Glu Gln His Val Phe Ala Phe Gln Ser Gly Gln Val Leu Ala Ala Leu
20 25 30

Pro Arg Thr Ser Arg Gln Val Gln Val Leu Gln Asn Leu Thr Thr Thr
35 40 45

Tyr Glu Ile Val Leu Trp Gln Pro Val Thr Ala Asp Leu Ile Val Lys
50 55 60

- 13 -

Lys Lys Gln Val His Phe Phe Val Asn Ala Ser Asp Val Asp Asn Val
 65 70 75 80

Lys Ala His Leu Asn Val Ser Gly Ile Pro Cys Ser Val Leu Leu Ala
 85 90 95

Asp Val Glu Asp Leu Ile Gln Gln Gln Ile Ser Asn Asp Thr Val Ser
 100 105 110

Pro Arg Ala Ser Ala Ser Tyr Tyr Glu Gln Tyr His Ser Leu Asn Glu
 115 120 125

Ile Tyr Ser Trp Ile Glu Phe Ile Thr Glu Arg His Pro Asp Met Leu
 130 135 140

Thr Lys Ile His Ile Gly Ser Ser Phe Glu Lys Tyr Pro Leu Tyr Val
 145 150 155 160

Leu Lys Val Ser Gly Lys Glu Gln Ala Ala Lys Asn Ala Ile Trp Ile
 165 170 175

Asp Cys Gly Ile His Ala Arg Glu Trp Ile Ser Pro Ala Phe Cys Leu
 180 185 190

Trp Phe Ile Gly His Ile Thr Gln Phe Tyr Gly Ile Ile Gly Gln Tyr
 195 200 205

Thr Asn Leu Leu Arg Leu Val Asp Phe Tyr Val Met Pro Val Val Asn
 210 215 220

Val Asp Gly Tyr Asp Tyr Ser Trp Lys Lys Asn Arg Met Trp Arg Lys
 225 230 235 240

Asn Arg Ser Phe Tyr Ala Asn Asn His Cys Ile Gly Thr Asp Leu Asn
 245 250 255

Arg Asn Phe Ala Ser Lys His Trp Cys Glu Glu Gly Ala Ser Ser Ser
 260 265 270

Ser Cys Ser Glu Thr Tyr Cys Gly Leu Tyr Pro Glu Ser Glu Pro Glu
 275 280 285

Val Lys Ala Val Ala Ser Phe Leu Arg Arg Asn Ile Asn Gln Ile Lys
 290 295 300

Ala Tyr Ile Ser Met His Ser Tyr Ser Gln His Ile Val Phe Pro Tyr
 305 310 315 320

Ser Tyr Thr Arg Ser Lys Cys Lys Asp His Glu Glu Leu Ser Leu Val
 325 330 335

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Ala Ser Glu Ala Val Arg Ala Ile Glu Lys Thr Ser Lys Asn Thr Arg
340 345 350

Tyr Thr Tyr Gly Gln Gly Ser Glu Thr Leu Tyr Leu Ala Pro Gly Gly
355 360 365

Gly Asp Asp Trp Ile Tyr Asp Leu Gly Ile Lys Tyr Ser Phe Thr Ile
370 375 380

Glu Leu Arg Asp Thr Gly Thr Tyr Gly Phe Leu Leu Pro Glu Arg Tyr
385 390 395 400

Ile Lys Pro Thr Cys Arg Glu Ala Phe Ala Ala Val Ser Lys Ile Ala
405 410 415

Trp His Val Ile Arg Asn Val
420